

EML 4500 - MACHINE DESIGN I
Common Course Syllabus

Catalog Data: 3 CREDITS. Introduction to machine design; fundamental principles in strength of materials; static and fatigue failure theories; design of machine elements; and design projects.

Prerequisites: EGN 3331 - Strength of Materials or equivalent
EML 2538 – Computer Applications in ME 1 or EGN 2213 - Computer Applications in Engineering I

Goals: This course will integrate the knowledge of Statics, Dynamics, Strength of Materials and Engineering Materials into the design process of machine elements. Students will learn the fundamentals of the design process, and the design of some common machine elements will be the focus. The students will apply the concepts in the design of a simple machine.

Topics:

1. Introduction to machine design
2. Review of stress, strain, and deflection
3. Static and fatigue failure theories
4. Design of shafts and keys
5. Design of bearings
6. Design of springs
7. Design of screws and fasteners

Course Outcomes: (numbers in parentheses indicate correlation of the outcome with the appropriate ABET program outcomes 1-7)

1. The student will be able to use the knowledge in Statics and Strength of Materials for design of machine elements. (1,2,6)
2. The student will learn the concepts of failure theories, and apply them in machine design. (1,2,6)
3. The student will be able to design shafts for rotating machinery. (1,2,6)
4. The student will be able to design springs and fasteners for machines. (1,2,6)
5. The student will be able to communicate effectively through written and oral skills. (3)

Design Content:

This course has design content of 1 credit. 33% of the final grade will be determined from design projects.

Updated 2/19